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8th August 2017

Saul White
Wales Permitting Centre
Natural Resources Wales
Cambria House
29 Newport Road
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Via email: saul.white@naturalresourceswales.gov.uk

Application reference: PAN-000849
Applicant: Radnor Hills Mineral Water Company Ltd
Facility: Radnor Hills, Heartsease, Knighton, Powys, LD7 1LU

Dear Saul,

RE: PAN-000849 Radnor Hills Schedule 5 Response
Email of 2 August 2017 regarding final issue to clarify

Thank for the opportunity to speak on 3rd August regarding your points below on clarifying the approach Radnor Hills is proposing for the piped discharge to the River Teme. This reply is to address these final points and propose a way forward so that the EP can be finalised. I realise you have to consult with the EA and NE on these before you can reach a final conclusion.

Further to the submission from SDL on behalf of Radnor Hills on 2nd August 2017, and your reply requesting clarification on whether the model used concentration values expected from the end of the discharge pipe or after a swale, I confirmed that the model did not take account of a swale as we cannot be confident in predicting what the swale could achieve either in terms of SRP or temperature reduction.

Regarding the temperature of the effluent, you have accepted our suggestion to monitor temperature at three locations (leaving the MBR, at the point of final discharge, and after the mixing zone in the river) for one year in order to reliably determine the temperature impact. If this monitoring demonstrated an issue we would look to reducing the temperature further.

This note responds to the SRP point, our approach to which is along the same lines as that for temperature.

Your request for clarification via email was:

Thank you for confirming that [note added: this was a reference to direct discharge modelling not via the swale]*, the only issue I can see is that the proposal is to discharge to the river Teme via a drainage swale and the modelling provided does not represent that activity, also the drainage swale would need to be shown as a discharge location with sample point etc. in the permit and we don't have any details at present.*

The modelling results show that the effluent discharge exceeds the CSMG target of 0.025mg/l (I know that the background also exceeds this target), if the swale would potentially treat this water further and reduce the impact on the river this should be reflected in the modelling provided as part of the response.

This response addresses the scientific logic in our proposed approach and then the practical detail of how this would be accomplished.

As we discussed we think that the lined swale could in theory help reduce SRP, certainly initially as a culture established in the swale itself. Our experience and that of WWTC is that SRP, or at any rate phosphate, is incorporated into biomass and over time swales shed biomass naturally and that the phosphate content in this biomass can easily eventually exceed the limits we are discussing. This is why SDL recommended MBR as BAT in the first place to retain the microorganisms and not discharge these. In the oligotrophic receiving environment of the Teme we feel that while these microorganisms would not increase SRP immediately that they could affect it longer term downstream, so we are being rigorous here. It is the intent of RH to cause no deterioration in the quality of the receiving environment, and if possible improve it, as that is their belief system and values.

Therefore, we propose to provide full detail on the swale, which is intended to provide a suitable discharge structure / system for temperature management and to monitor this and SRP for a year, as described below, and if several consecutive samples indicate an issue in terms of the discharge of temperature or SRP then RH would introduce engineering temperature management and / or chemical phosphate removal.

We do not feel that modelling at this time is warranted, due to the very variable nature of the receiving environment and the final effluent quality not being known (there is very little phosphate in the existing system as so it may transpire that phosphate is lower than the Aquabio design levels). We instead wish to undertake monitoring to inform the need or otherwise for these additions to what we believe to already be BAT, the MBR. We propose that this is via an Improvement Condition in the permit.

The practical approach would be for Radnor Hills to provide detailed drawings of the swale which are currently being prepared. It should be noted that discussion with the EA and NE has stated that they would prefer the discharge to occur at the second location modelled – slightly upstream of the originally proposed point – and therefore a new permit-boundary map will need to be submitted.

We also are proposing that the monitoring locations are:

1. As it leaves the MBR treatment plant on site, the agreed full suite for discharge in the EP (to include temperature)
2. At arrival at the head of the swale, for temperature only to see what the pipeline accomplished
3. At the formal discharge point from the swale into the Teme (as the permitted discharge), to include the full suite as above and temperature

It is proposed that these are taken regularly, as you are likely to require, at point 1 as this is easy to automate. Grab samples would be taken at points 2 and 3, to be taken fortnightly for the first months until a pattern is established and then monthly after that for points 2 and 3. If data or visual evidence indicates a problem then Radnor Hills will progress to implement the above technical options.

<u>Timing</u>

The MBR is currently being commissioned, and Radnor Hills has begun a regular sampling programme of the groundwater piezometers to get current background data around the current lagoons. Radnor Hills will continue to take samples from the MBR outlet as it moves to optimum performance. This sampling will help provide a dataset to the proposed discharge to river.
It seems possible that the consultation on the EP could be finalised by mid-September and the Draft EP in October for a final EP in November, approximately. While Radnor Hills has acted to implement the MBR proactively to improve the water quality in advance of the EP, it wants to only construct the pipeline and swale when the final details are agreed. If this date estimate of November is correct it would mean that construction of the pipeline and swale would be Spring

2018 earliest and we would like the NRW's and EA's / NE's views on this likely construction programme.

Thank you for your help in finalising these details.

Yours sincerely,

Via email

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